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The system consists of passive mount, force generating actuators, sensors, and electronic controllers. To attenuate the vibration of the engine, it is necessary to design a controller that able to superimpose the unwanted vibration signal with a canceling signal of exactly the same magnitude and a phase difference of 1800. Different control strategy has been proposed, however most of the control approaches are model based control design in which precise mathematical model of the plant is required to be known. To design a simple and robust controller in the field of active engine mounting system, Intelligent Sliding Mode Control using Natural Logarithm Sliding Surface is proposed. It combining the advantages of adaptive, neural network and robustness, sliding mode control strategies to develop model-free control design. The effectiveness of the proposed methods is evaluated both on the simulation and experimental result to the lab-scale active engine mounting system. The results show that the proposed controllers able to suppress the vibration of the engine effectively in the band of frequency interest from 5 Hz to 30 Hz.

PP-162 Preparation of Nutritious Drink from Date Palm Kernels

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This research study was undertaken to explore the potential of use of date palm kernel (DPK) for food industry and to produce edible product, which was nutritious DPK drink. The DPK powder was examined for toxicity by using Brine Shrimp Lethality Bioassay. DPK powder was analyzed for nutritional compounds that results in protein 0.99 mg/g, glucose 0.74 g/L fructose 0.6 g/L and anther traces of simple sugars. Analysis of Mineral elements in the ash showed the average values of Cu, 0.92 mg/L; Ca, 2.04 mg/L; Fe, 0.91 mg/L; Mn, 0.43 mg/L; Mg, 4.99 mg/L and K, 6.74 mg/L. The nutritional values of the prepared DPK drinks were determined. Factorial design was used for optimization with three independent variables, which were the volume of water, amount of sucrose and citric acid. The maximum overall acceptability through the sensory evaluation test was achieved for the DPK drink formulation of 150 mL water, 30 g sucrose and 4.0 g citric acid. Analysis of the results was evaluated using Design-Expert (DX6) software by statistical tools.

PP-165 Fuzzy-based NCTF Control System of Point-to-point (PTP) Linear Positioning System

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Nominal characteristic trajectory following (NCTF) controller, which consists of an nominal characteristic trajectory (NCT) and a compensator, is a practical controller since its design is only based on a very simple open-loop experiment. The objective of the compensator in NCTF controller is to make an object motion follows the NCT and to end the motion at the origin. Its simplicity even more increased by the introduction of fuzzy compensator compared to trial and error original PI compensator. The proposed fuzzy compensator is practical since its all design parameters are based on NCT information and hardware specifications used; which are sensor resolution and actuator rated input; only. Trial and error or uncertain parameters value are completely eliminated. By using a linear positioning system, control performance of the proposed compensator and its robustness are examined experimentally using single axis linear positioning table. The results show that the proposed compensator is effective for the entire displacement range and able to force object motion as fast as determined by the NCT. Proposed compensator has consistently outperformed the PI and existed fuzzy compensators.